

WHAT IS CLAIMED IS:

1. An information storage medium, comprising:

a substrate;

a plurality of lower electrode lines that are arranged on the substrate to be in parallel with one another and apart from one another at a constant interval;

a plurality of upper electrode lines that are arranged to cross the lower electrode lines while being arranged in parallel with one another and apart from one another at a constant interval; and,

an information layer having cells that are arranged in a matrix and located at each crossing region of the lower electrode lines and the upper electrode lines.

2. The information storage medium according to claim 1, wherein the information recording layer is made of a phase-change.

3. The information storage medium according to claim 1, wherein the lower electrode lines and the upper electrode lines are made of a metal material.

4. The information storage medium according to claim 1, wherein each of the lower electrode lines and the upper electrode lines has a thickness of less than 50 nanometers.

5. The information storage medium according to claim 1, wherein the lower electrode lines and the upper electrode lines are formed as transparent electrodes.

6. The information storage medium according to claim 1, wherein a silicon oxide film is coated on the entire surface of the information storage medium, and a transistor is formed below each cell by forming a P- region, an N region, and a P+ region sequentially.

7. An optical device for reproducing information recorded in an information storage medium having cells of less than a spot size of a light beam, comprising:

a beam splitter for directing an incident light beam to the information storage medium while receiving the light beam reflected from the information storage medium and changing direction of the received light beam to be outputted;

an objective lens for focusing the light beam from the beam splitter on the cells of the information storage medium while transferring the light beam reflected from the information storage medium to the beam splitter; and,

an optical detector for receiving the light beam from the beam splitter and reproducing information recorded in the information storage medium by detecting a reflectivity difference at each cell through the received light beam.

8. The optical device according to claim 7, wherein the optical device further comprises a diffraction grating for extracting a 1st diffraction beam and a -1st diffraction beam from the light beam incident on the beam splitter.

9. The information storage medium defined by Claim 2 wherein said phase change medium comprises a chalcogenide material.

10 The information storage medium defined by Claim 3 wherein said metal material comprises at least one of gold, silver, copper, titanium,

tungsten, aluminum, titanium nitride and aluminum nitride.

11. The information storage medium defined by Claim 5 wherein said transparent electrodes comprise indium-tin-oxide.